

REMARKS

Claims 1-20 are all the claims pending in the application.

Claims 1-20 are rejected under 35 U.S.C. § 102(e) as being clearly anticipated by Umemoto et al. (U.S. Patent No. 6,199,995); claims 1 and 2 are rejected under 35 U.S.C. § 102(e) as being clearly anticipated by Higuchi et al. (U.S. Patent No. 6,224,223); claims 1 and 2 are rejected under 35 U.S.C. § 102(e) as being clearly anticipated by Yang et al. (U.S. Patent No. 6,151,089); claims 1-20 are rejected under 35 U.S.C. § 103(a) being unpatentable by Redmond et al. (U.S. Patent No. 5,664,862) in view of Kalamanash (U.S. Patent No. 5,532,852); and claims 1-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yang et al.'089.

Reconsideration and removal of these rejections are respectfully requested on the basis of the present amendment to the claims and the following remarks.

I. Formal Matters

The Examiner has initialed all of the references cited in the IDS filed on April 5, 2002 except for one. Specifically, the Examiner has failed to initial U.S. Patent No. 5,408,388. In the pending office action, the Examiner has not provided an explanation of why this reference was not initialed. Applicant respectfully requests that the Examiner to initial this reference or provide an explanation as to why it was not initialed.

II. Objection to the Title

The Examiner has objected to the title for not being clearly indicative of the invention to which the claims are directed. Accordingly, Applicant has amended the title to -A Liquid-

Crystal Display Device With Sloped Surface Light Pipe--. The Applicant has changed the title to be clearly indicative of the claimed invention and therefore respectfully requests that the objection to the title be reconsidered and withdrawn.

III. Claim Rejections

Claim 2 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner cannot determine the meaning of the claim language "near" and "can be switched on and off." Applicant has amended claim 2 to more clearly recite that the light source is adjacent to the incident side of the light pipe, and the light source is operable to be switched on and off. Therefore, Applicant respectfully requests that the rejection of claim 2 under 35 U.S.C. § 112(2) be reconsidered and withdrawn.

Claims 1-20 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Umemoto et al (U.S. Patent No. 6,199,995). To be an "anticipation" rejection under 35 U.S.C. § 102, the reference must teach every element and limitation of the Applicant's claims

Applicant submits that the Umemoto reference fails to teach a reflective layer disposed on the lower surface of the light pipe as recited in independent claims 1 and 12. As can be clearly seen in Figure 8 of the Umemoto reference, the reflective layer 64 is disposed several layers beneath the light pipe 1. Accordingly, the reflective layer 64 is not disposed on the lower surface of the light pipe as recited in claims 1 and 12.

Furthermore, the Umemoto reference fails to teach a liquid-crystal shutter disposed above the upper surface of the light pipe. In Umemoto, the liquid-crystal cells 63 and reflective layer 64 are disposed below the light pipe 1 instead of above the light pipe as recited in claim 1.

In view of the above, Applicant submits that Umemoto fails to teach all of the limitation of independent claims 1 and 12. Therefore, since claims 2-11 and 13-20 depend from claims 1 and 12 respectively, Applicant requests that the rejections of claims 1-20 under 35 U.S.C. § 102(e) be reconsidered and withdrawn.

Claims 1 and 2 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Higuchi et al. (U.S. Patent No. 6,224,223). The Examiner alleges that Higuchi discloses a light pipe with a reflective layer beneath and an LCD (which includes at least one polarizing plate) above. However, Higuchi fails to teach or disclose the light path as recited in claim 1.

Higuchi shows a range of light from the light source 15 is output from the upper surface through the step differentiating faces 12b and the incident portions 22 (see Fig. 2). The light is not reflected on a lower face of the light pipe. Since the light is obliquely output with respect to the observation surface, components of the light directed normal to the observation surface are not large. In order to overcome this drawback, a prism sheet (illustration panel) must be provided on the upper surface of the light pipe. Reflective layers (13) for reflecting exterior light are provided above the light pipe in Higuchi whereas the reflective layer is provided below the light pipe in the present invention.

As discussed above, the path of the output of light as described in claim 1 is not obtained by Higuchi's device. Therefore Applicant respectfully requests that the rejection of claims 1 and 2 under 35 U.S.C. § 102(e) be reconsidered and withdrawn.

Claims 1-2 stand rejected under 35 U.S.C. § 102(e) as being clearly anticipated by Yang (U.S. Patent No. 6,151,089) and claims 1-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yang et al. (U.S. Patent No. 6,151,089). The Examiner alleges that the Yang reference teaches a light pipe having a reflective layer on its lower surface and an LCD on its upper surface. Further, the Examiner alleges that the upper surface of the light pipe comprises slopes and flat surfaces.

Applicant submits the cited references fail to teach or suggest all of the claim limitations as required under both 35 U.S.C. § 102(e) and 35 U.S.C. § 103(a). Regarding independent claims 1 and 12, Yang fails to teach or suggest a reflective layer disposed on the lower surface of the light pipe. As shown in Figure 1 of Yang, the reflective layer 8 is disposed on the lower surface of the first substrate layer 1 and not on the lower surface of the light pipe 20.

Additionally, with respect to claim 12, Yang fails to teach or suggest a light pipe having flat surfaces that are inclined with respect to the reference plane. As shown in Figure 1 of Yang, the flat surfaces 22 of the light pipe 20 are parallel to the reference plane and not incline thereto. Accordingly, Applicant submits that the Yang does not teach or suggest all of the limitations of the claims, and therefore, the Examiner has failed to establish a *prima facie* case of obviousness. Moreover, since the remaining claims are dependent on claims 1 and 12, Applicant submits that they are at least patentable by virtue of their dependency from claims 1 and 12.

Finally, claims 1-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Redmond (U.S. Patent No. 5,664,862) in view of Kalamanash (U.S. Patent No. 5,532,852). The Examiner uses the Redmond reference to allegedly teach all of the claim limitation except for the use of a polarizer. For that, the Examiner relies on the conventional structure of an LCD along with the teachings of Kalamanash regarding a typical LCD.

To establish a *prima facie* case of obviousness the Examiner must show that the prior art references, when combined, teach or suggest all of the claim limitations. See MPEP § 2143. Applicant submits that the cited references fail to teach or suggest all of the claim limitations. First, the light source of Redmond is an edge light for an LCD panel and therefore, the liquid-crystal shutter is not disposed above the upper surface of the light pipe as recited in claim 1. Second, the reflection layer in Redmond is not disposed on the lower surface of the light pipe. Instead, the reflective layer of Redmond is located on the side of the light pipe. Therefore, since Kalamanash does not cure these deficient teachings of Redmond, Applicant submits that the Examiner has failed to establish a *prima facie* case of obviousness. Accordingly, Applicant respectfully requests that the rejections of claim 1-20 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

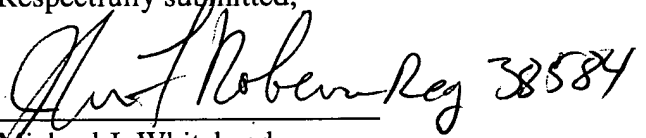
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
Appln. No.: 09/552,715

Attorney Docket No.: Q58947

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: **October 2, 2002**

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE TITLE:

The title is changed as follows:

Please replace the previous title with the following new title -- A Liquid-Crystal Display Device With Sloped Surface Light Pipe--.

IN THE CLAIMS:

The claims are amended as follows:

2. (Amended) A liquid-crystal display device according to claim 1, wherein said light source is disposed nearadjacent to the incident side surface of said light pipe, and said light source is operable to can be switched on and off.